

**BRIDGING
DARPA
THE GAP**



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Director
Special Projects Office



DT02 Emerging Threats

Chem/Bio Weapons



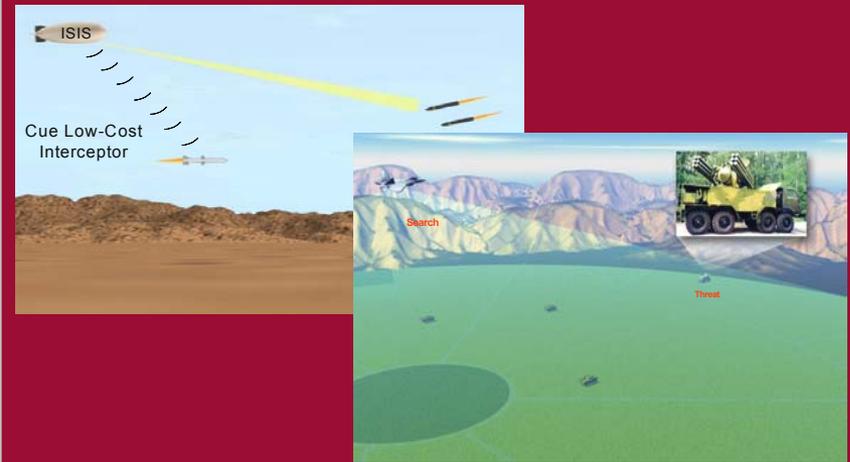
GPS Jamming



Underground Facilities



Tactical Missiles



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Threat: Low-Tech Cruise Missiles

Cruise Missiles



Unmanned Fixed Wing



Unmanned Rotary Wing



Intercept Concept



Existing
Surveillance
Architecture



New Low-Cost
Interceptor

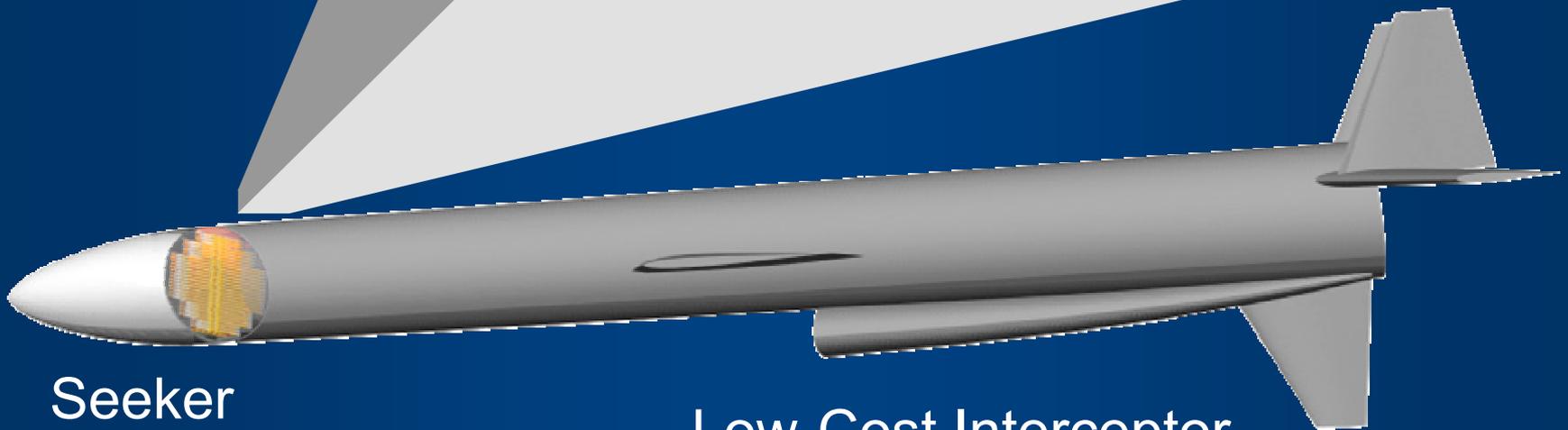
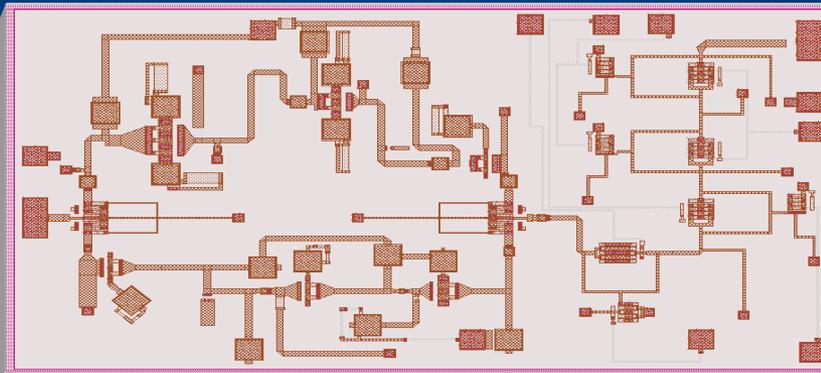


Low-Cost
Threats



Development of Low-Cost Seeker

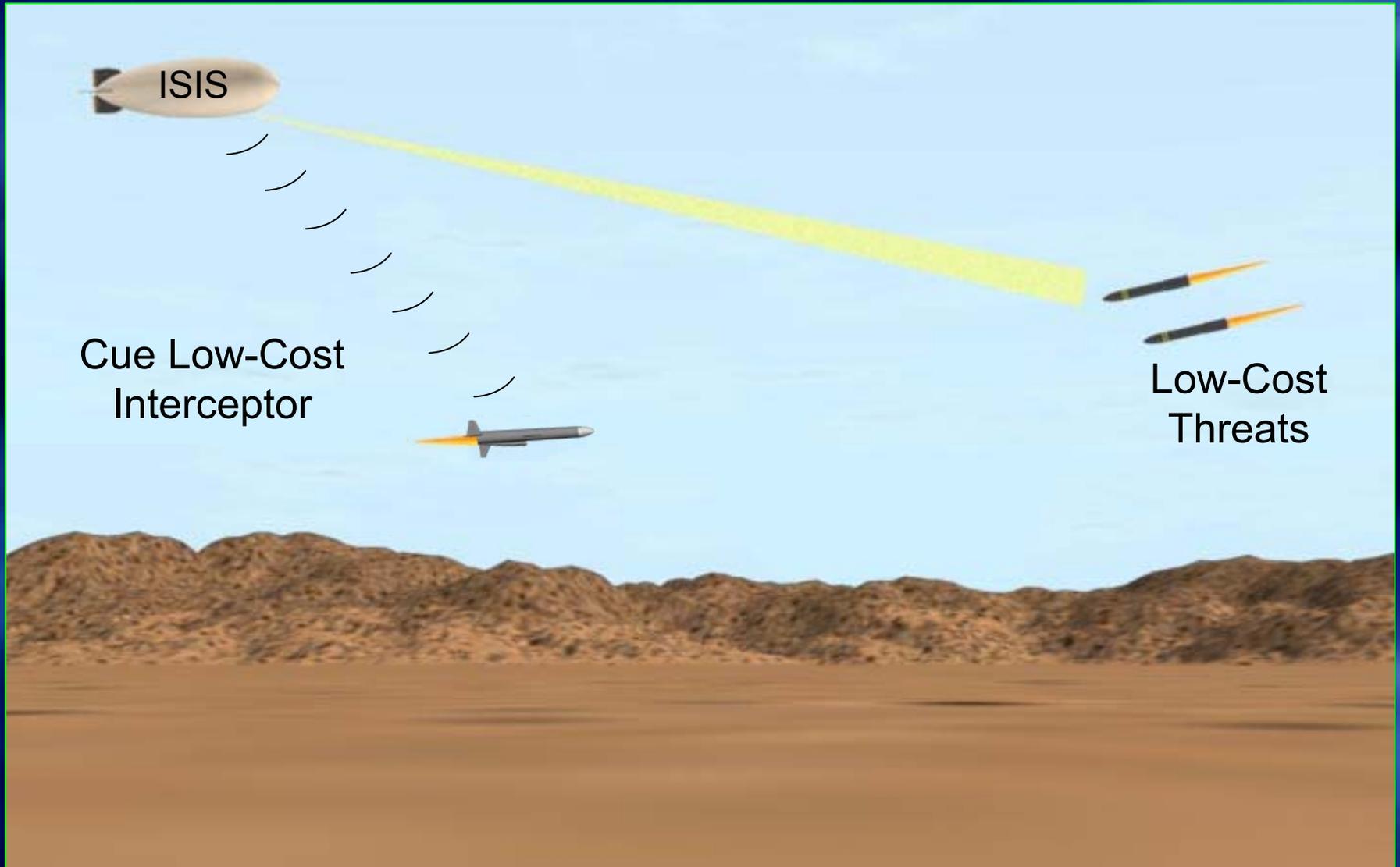
Ka-Band T/R Module



Seeker

Low-Cost Interceptor

Intercept Concept Using Airship

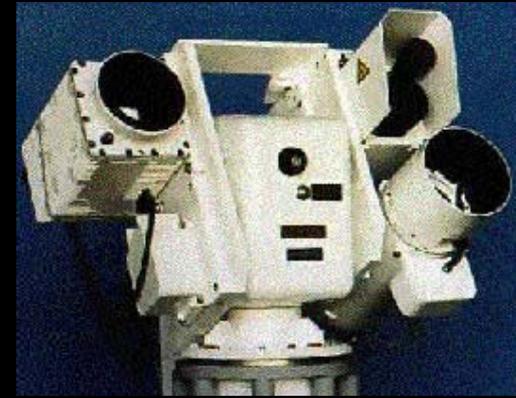


Non-RF Air Defense Threats

IR Missile (MANPADS)



EO/IR Tracker Upgrades



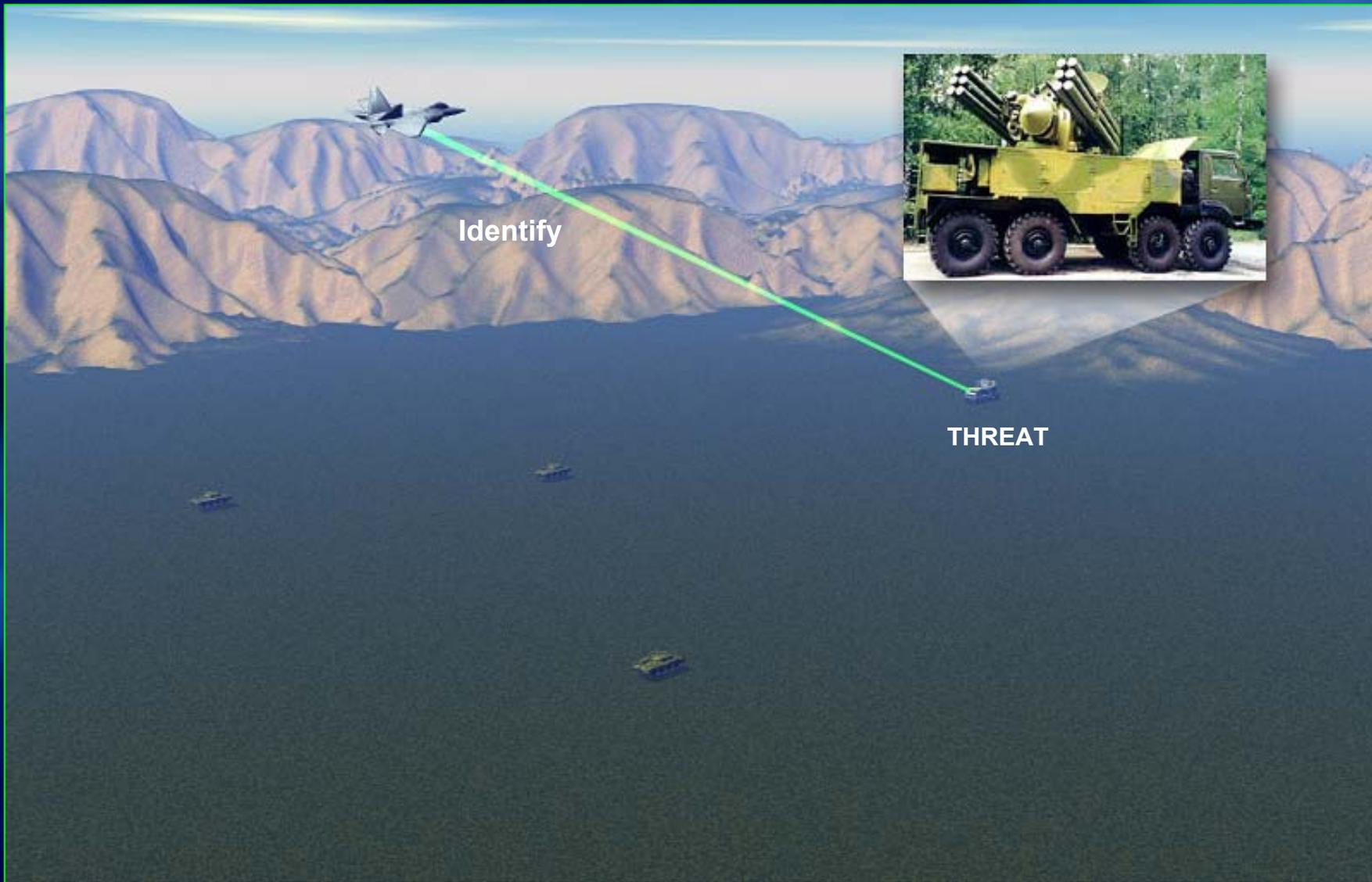
Laser Beam Riders



MEDUSA: Identify, Locate, Damage



MEDUSA: Identify, Locate, Damage



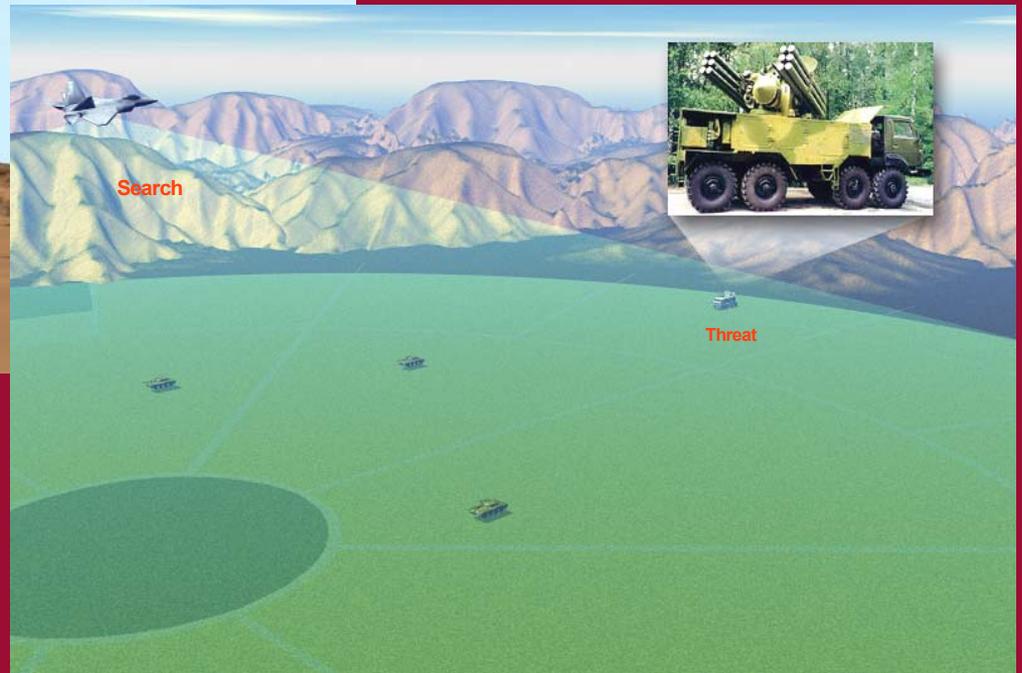
THE GAP

MEDUSA: Identify, Locate, Damage



DT02 Emerging Threats

Tactical Missiles



Today's Focus Areas

Chem/Bio/Rad



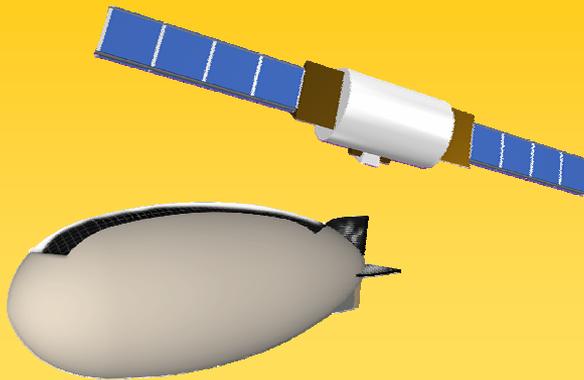
Counter Undergrounds



GPS-Free Navigation



Tailored Tactical Surveillance

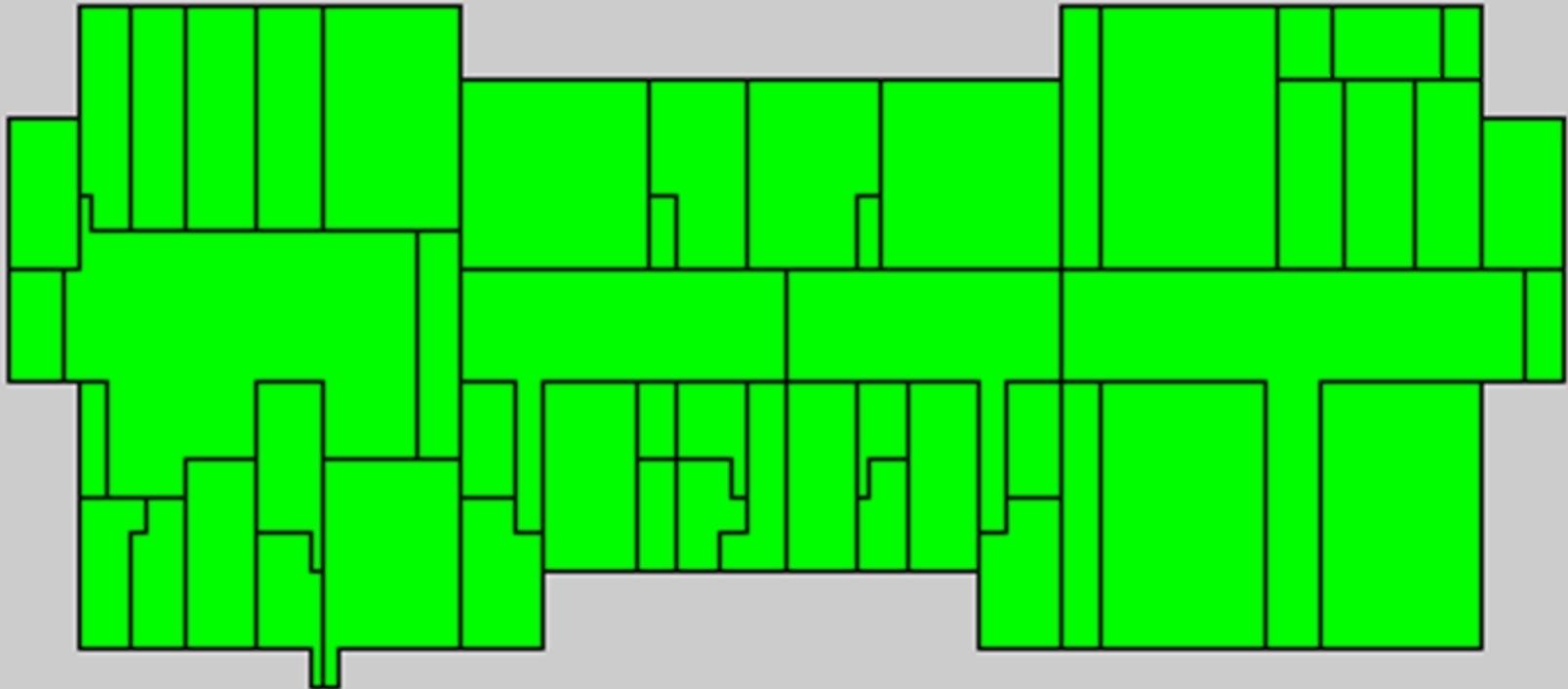


Urban Operations



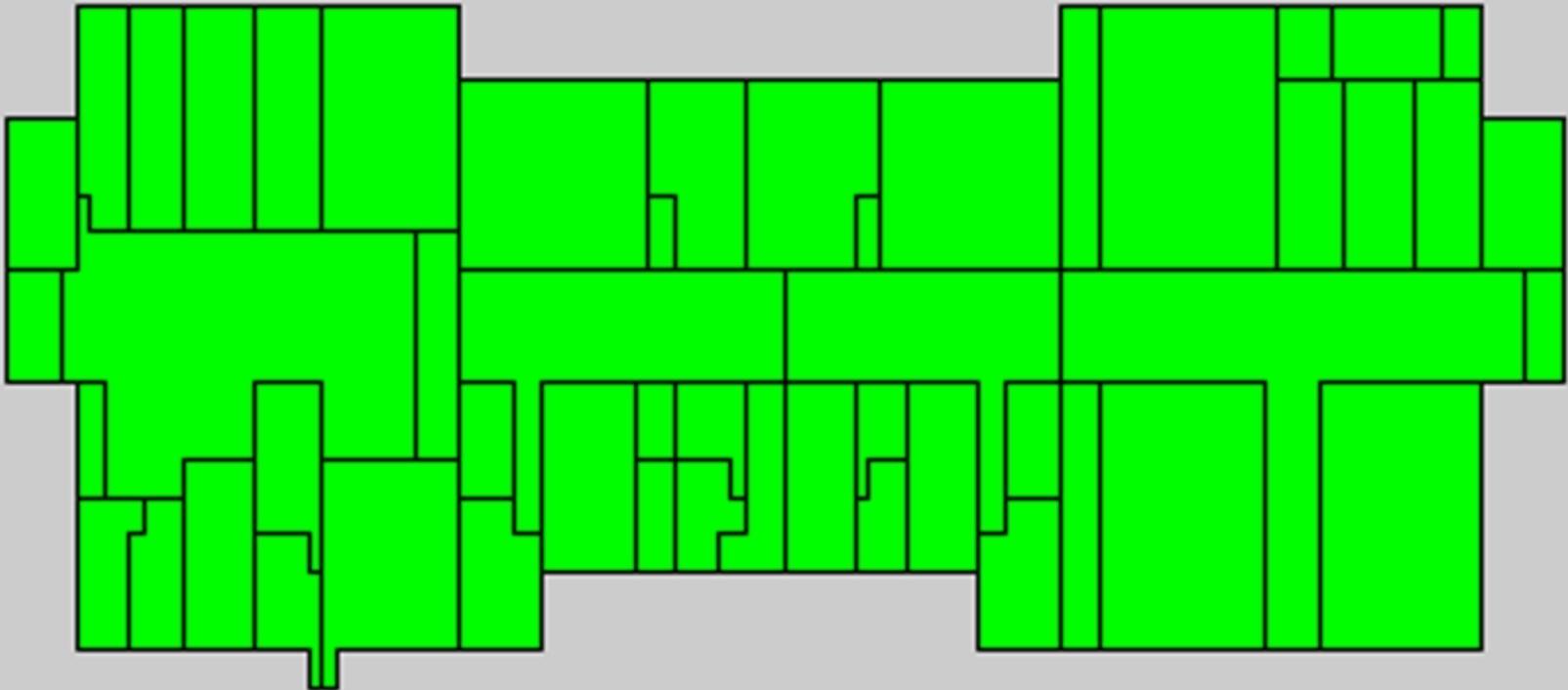
Threat: Unprotected Building

Today's Building



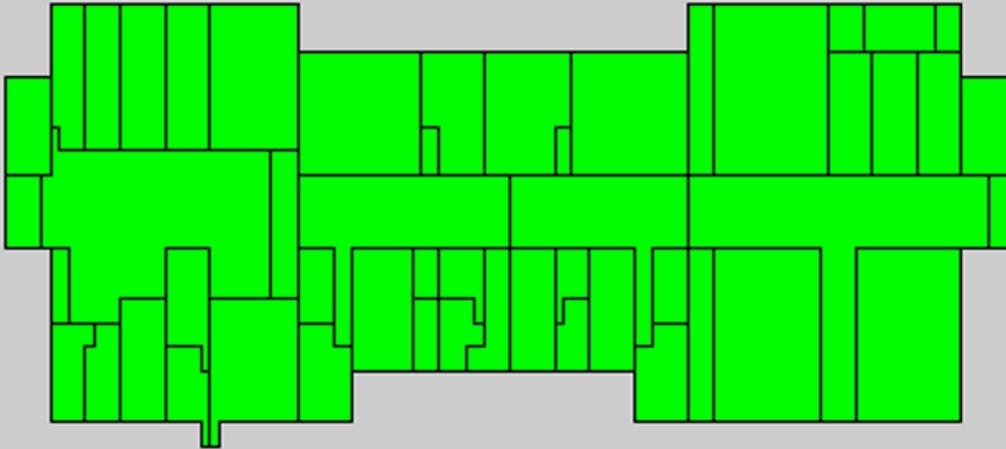
Solution: Protected Building

Immune Building

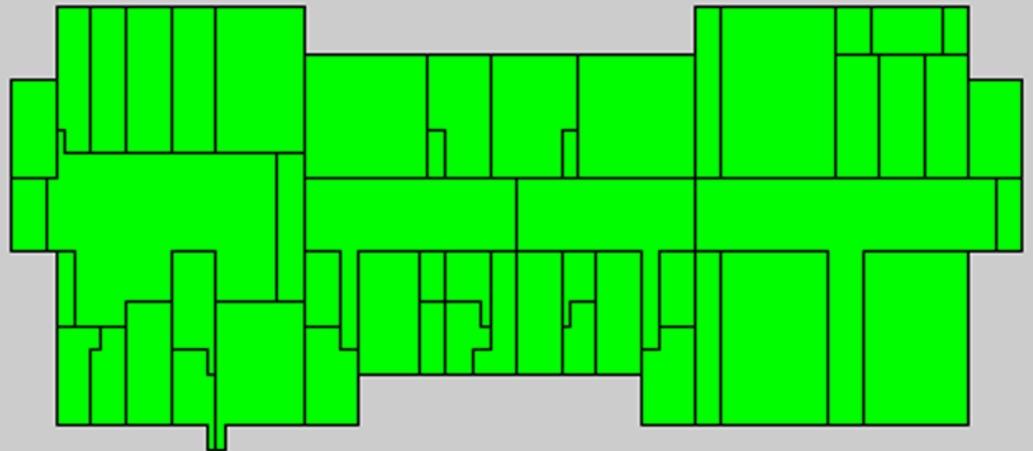


Active Response Enables Protection

Today's Building



Immune Building

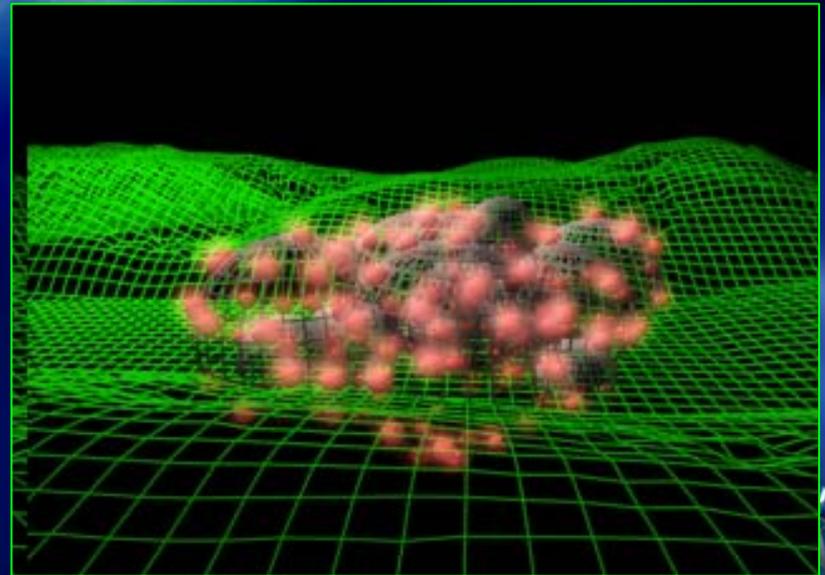
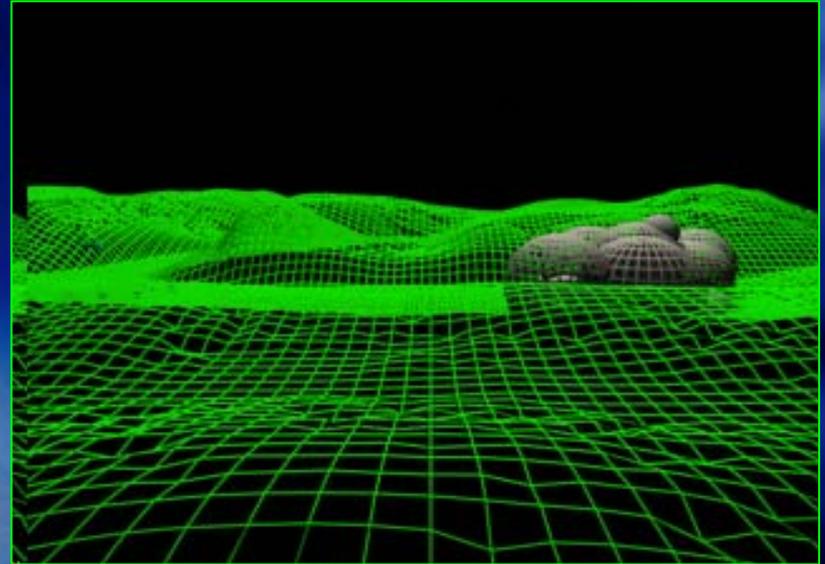


Threat: Battlefield Today



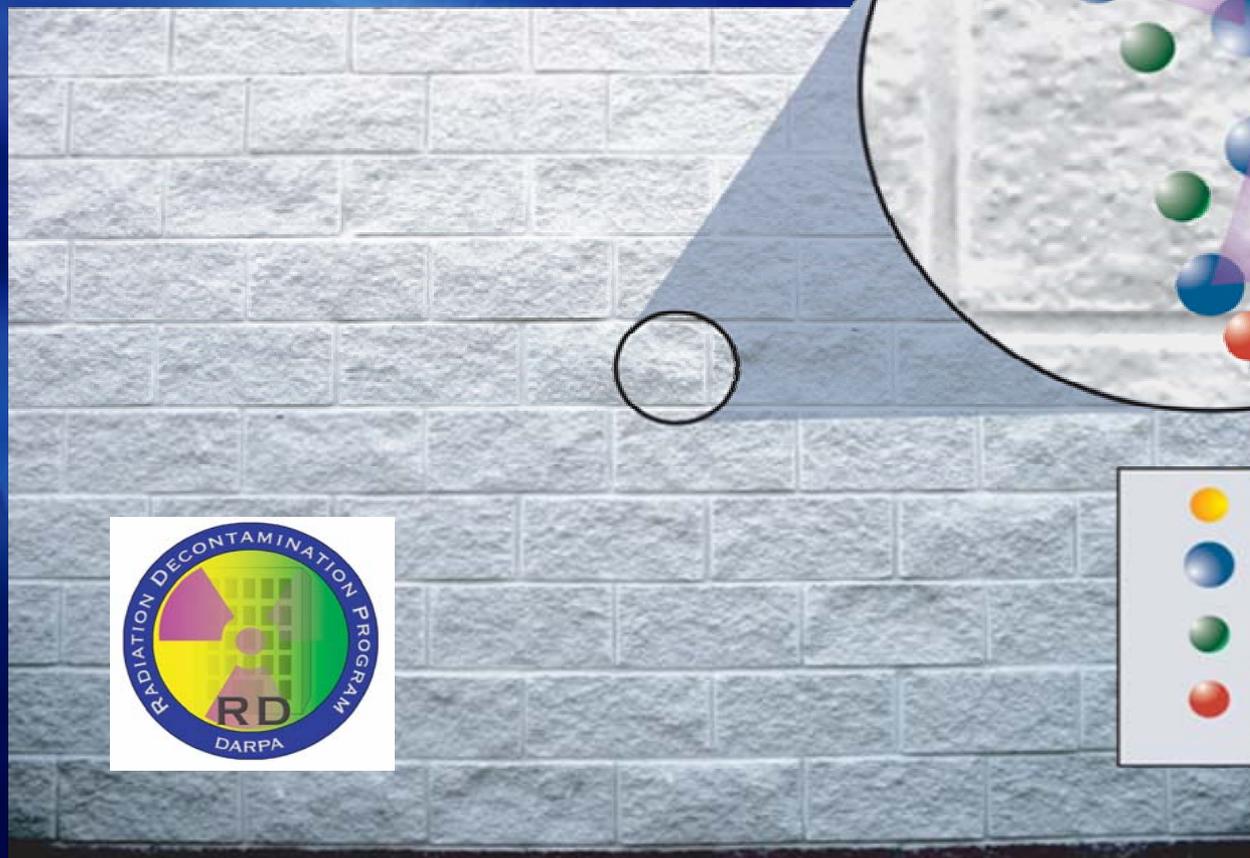
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Solution: Intercept / Knockdown



Radiological Defense

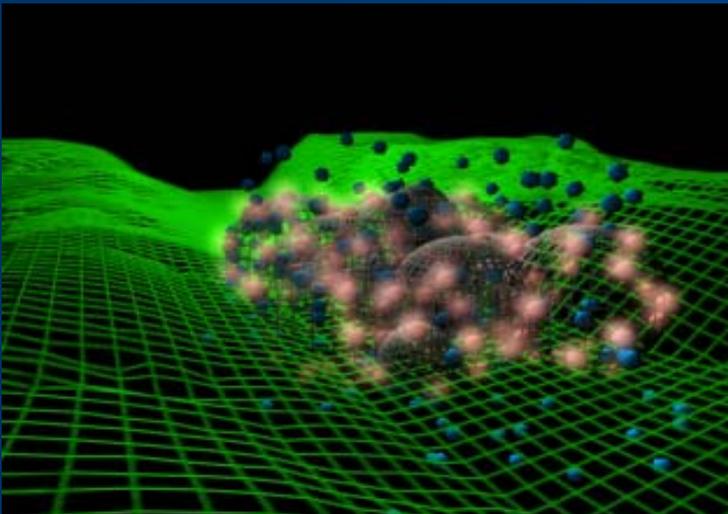
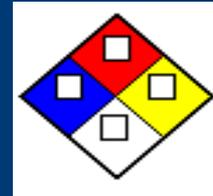
Problem: Cesium displaces Calcium in concrete



	Si
	O
	Ca
	Cs



Chem/Bio/Rad Defense



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Elaborate Facility



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“Cut-and-Cover” Facilities



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Caves



Underneath Surface Buildings

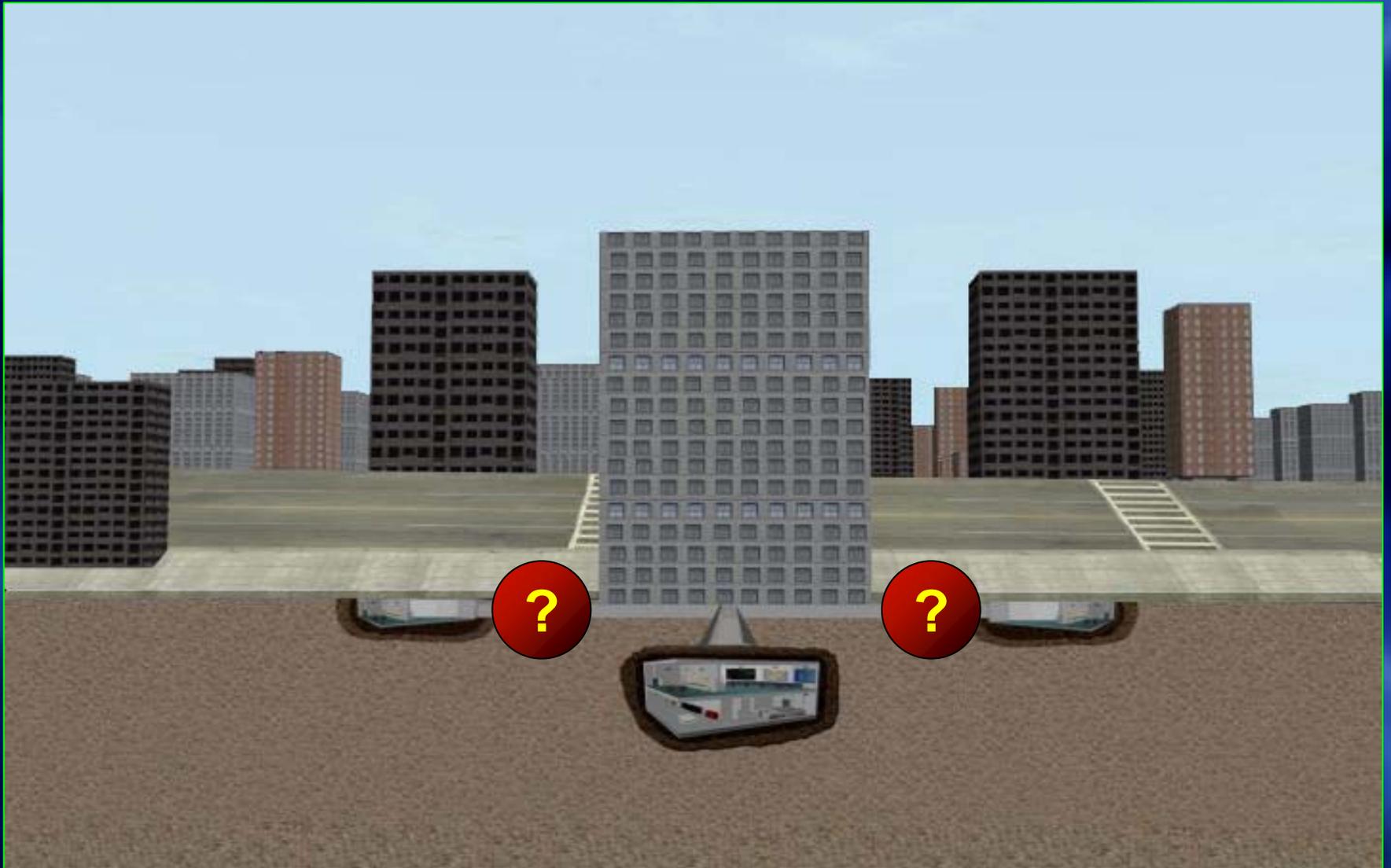


Diversity of Undergrounds

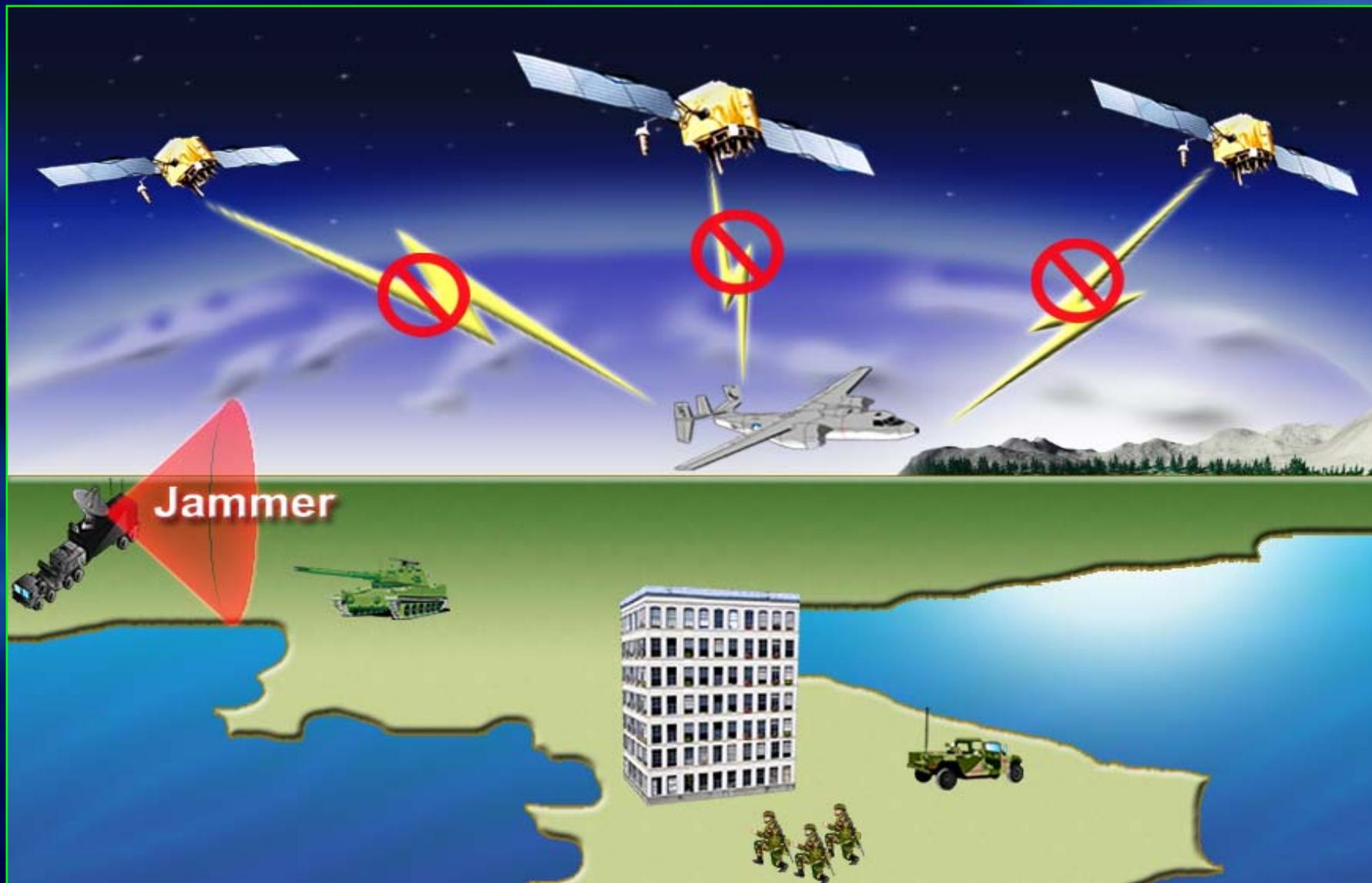


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New Opportunities



Challenge: Jamming



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Existing GPS Receivers

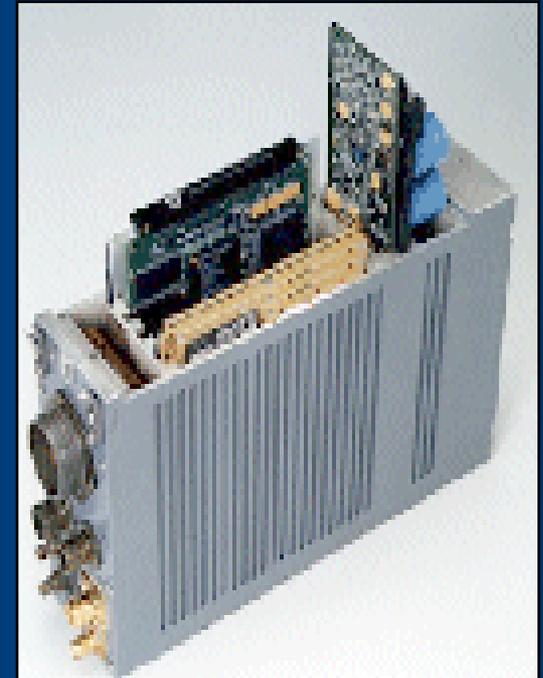
(DAGR)



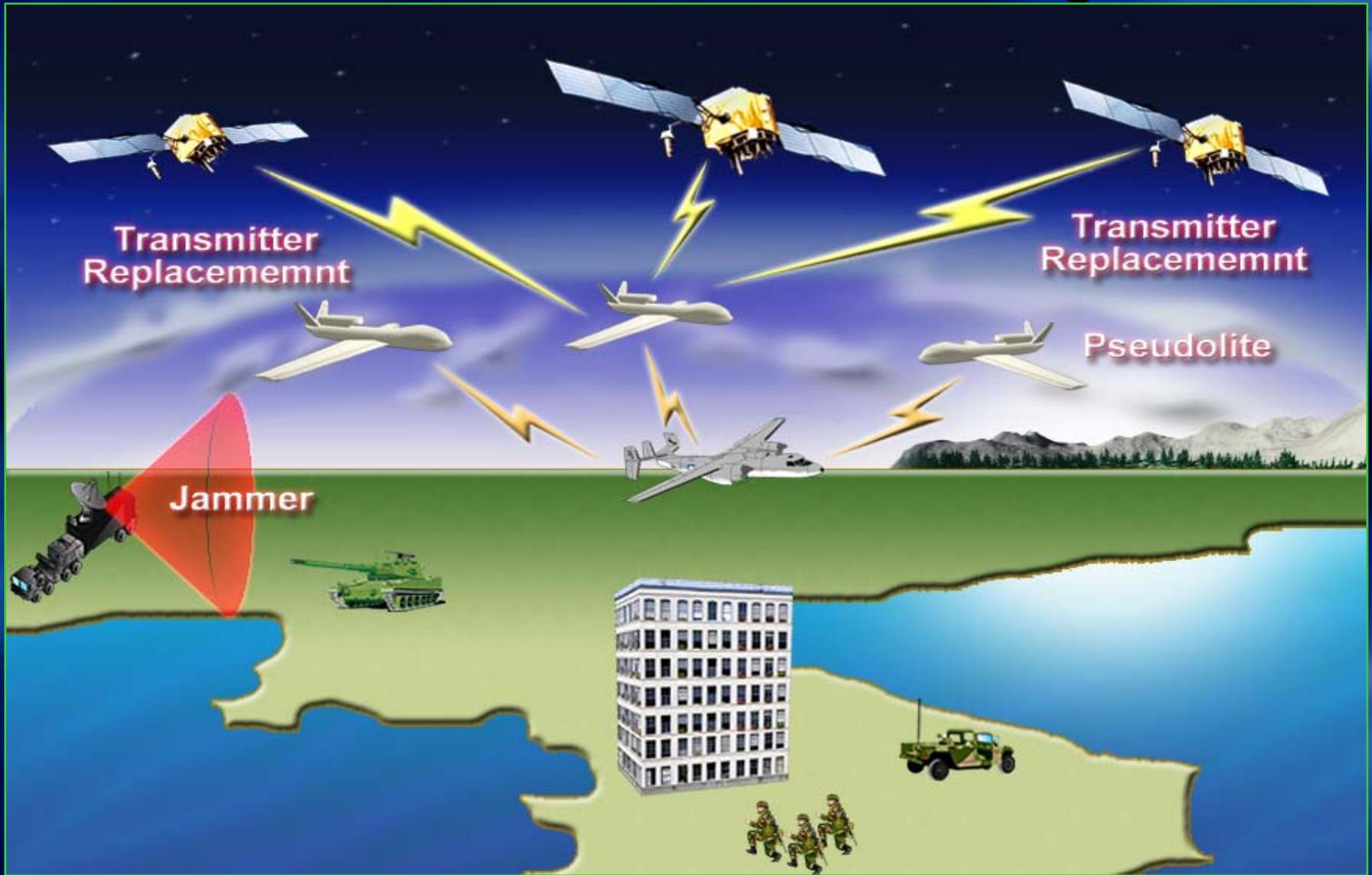
(PLGR)



(MAGR)



Solution: Pseudolites for Navigation



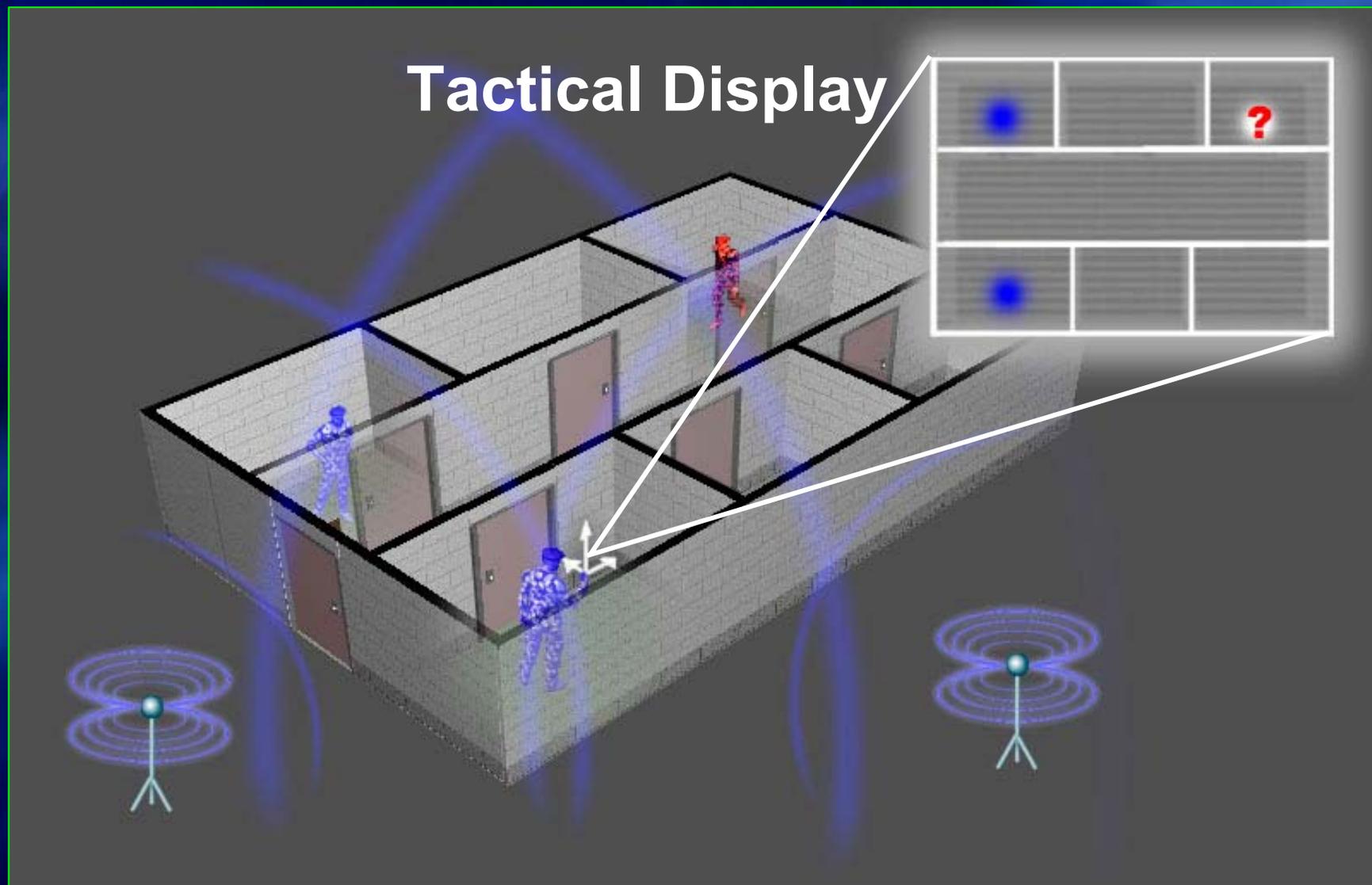
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Other Solutions: Signals of Opportunity



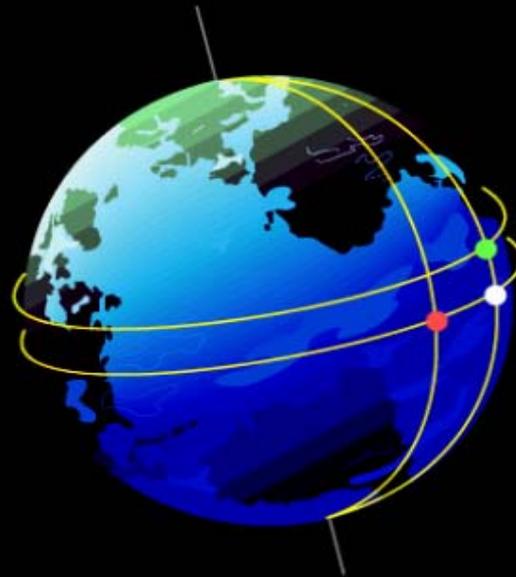
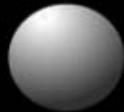
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Challenge: Indoor Navigation

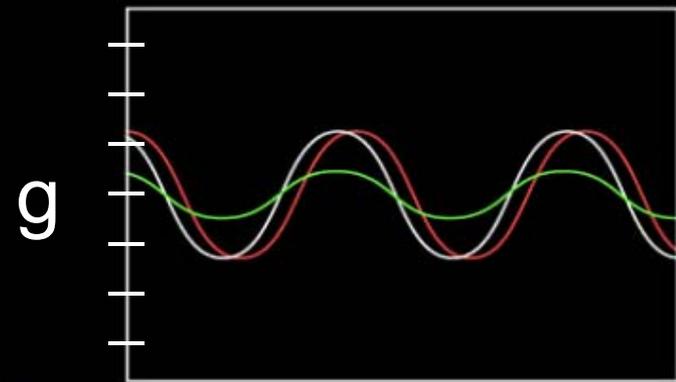


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Challenge: Long-Duration Applications

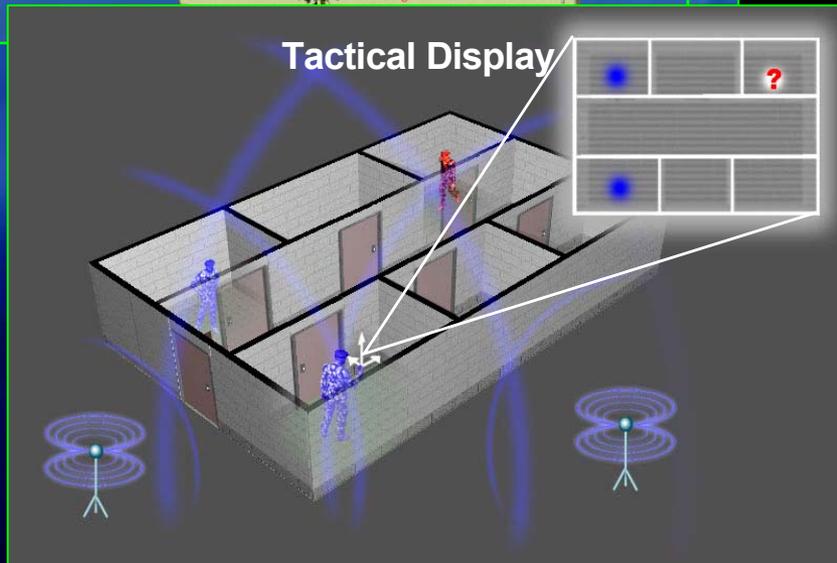
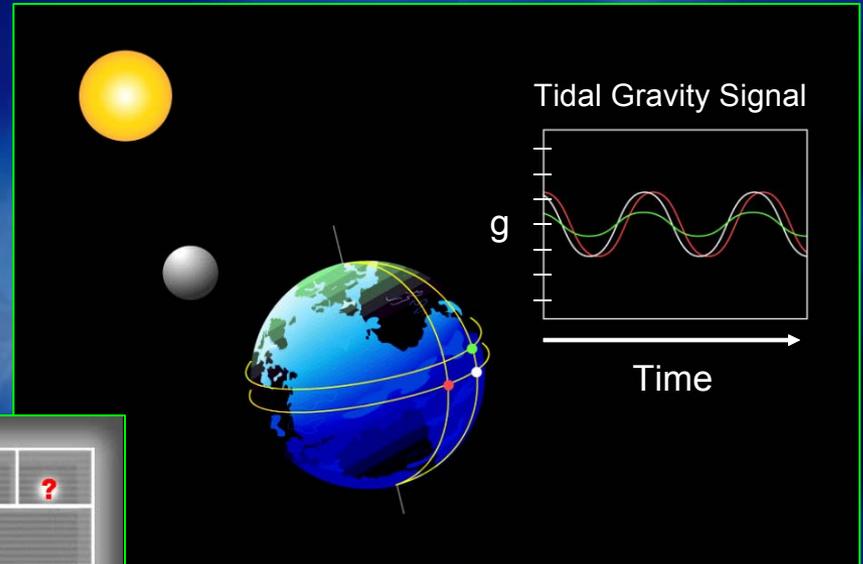


Tidal Gravity Signal



Time

GPS-Free Navigation



Phases of Conflict

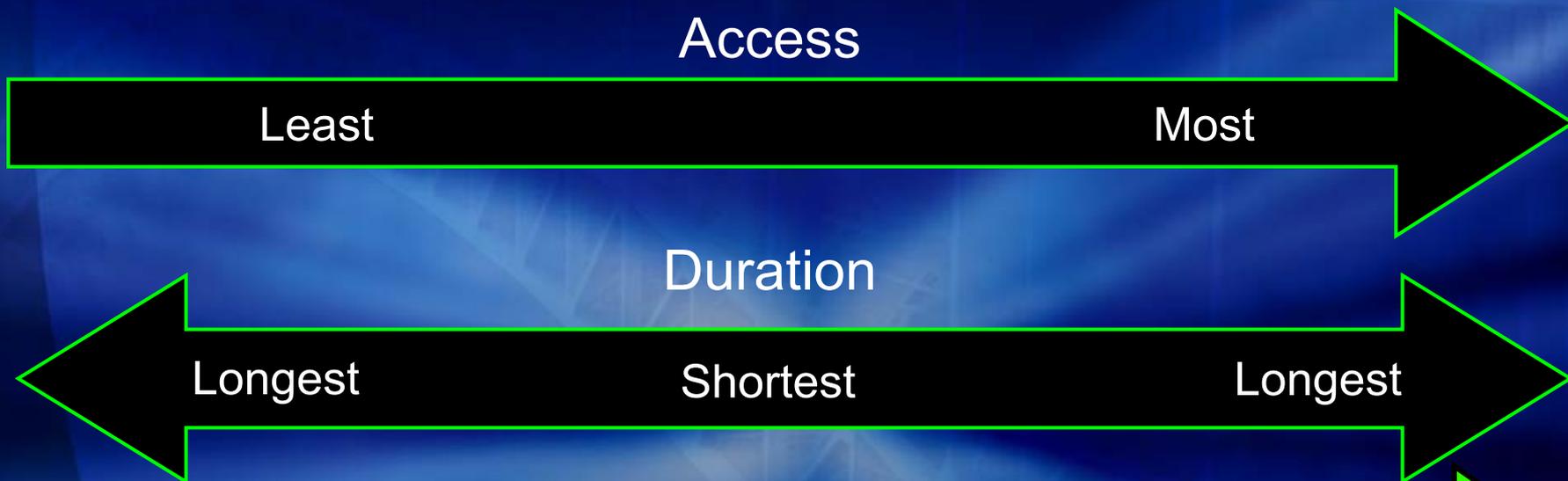
Phases of Conflict



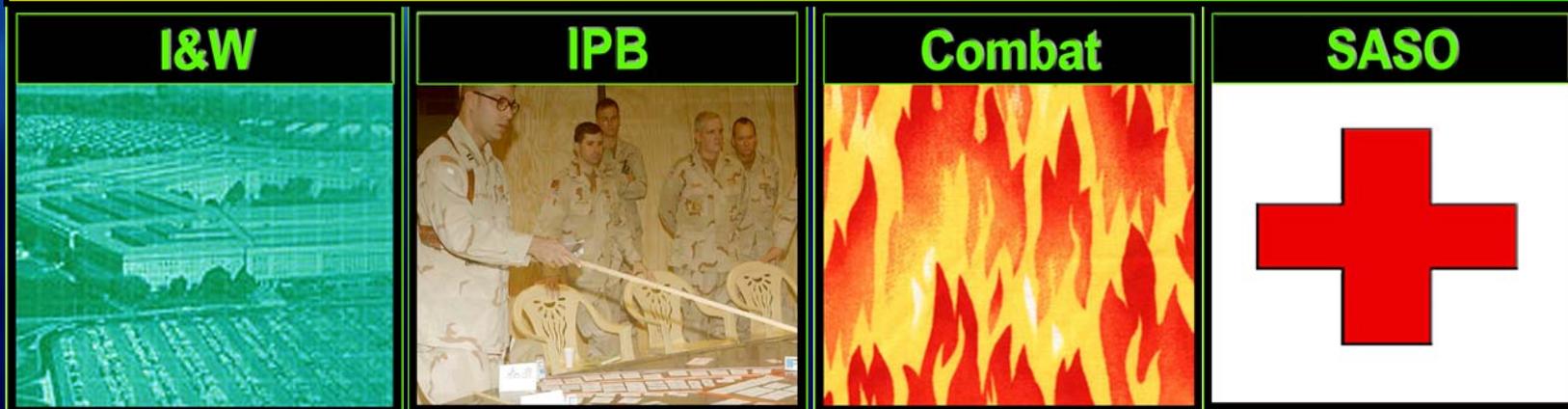
- Intelligence and Warning
 - Intelligence Preparation of the Battlefield
 - Combat
 - Stabilization and Support Operations



Access Available, Mission Duration



Phases of Conflict



Surveillance Today



Phases of Conflict

I&W



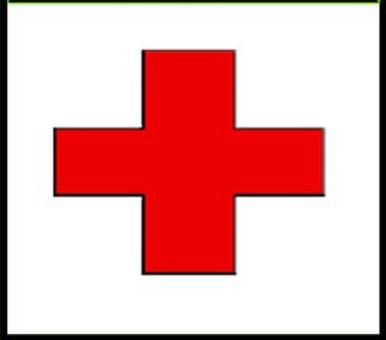
IPB



Combat



SASO



Surveillance Today



Phases of Conflict

I&W



IPB



Combat



SASO



Space for Tactical GMTI



Track and target moving ground vehicles

Phases of Conflict

I&W



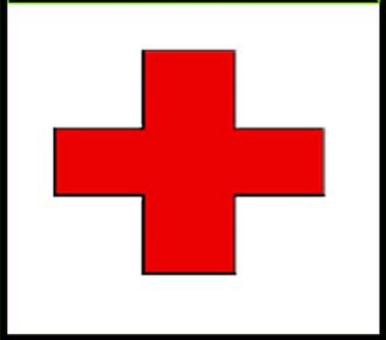
IPB



Combat



SASO



Airship for Air & Ground Movers



- | | | |
|--|--|---|
| <ul style="list-style-type: none"> • Track and target • Track and target • Comms Skyhook • Passive RF tags | <ul style="list-style-type: none"> • Track and target • Track and target • Comms Skyhook • Passive RF tags | <ul style="list-style-type: none"> • Air vehicles • Dismounted troops • Comms Skyhook • Passive RF tags |
|--|--|---|

Phases of Conflict

I&W



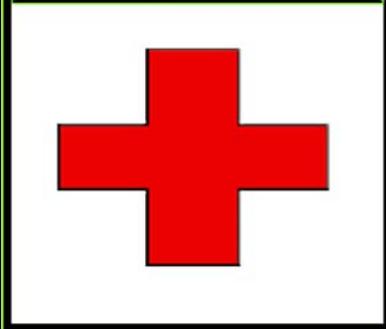
IPB



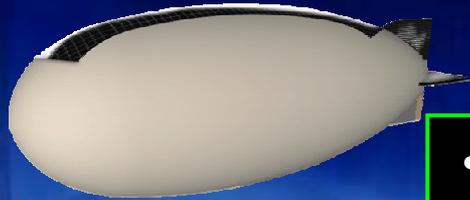
Combat



SASO



Surveillance of Moving Targets



- Track and target air vehicles
- Track and target dismounted troops
- Comms Skyhook
- Passive RF tags (Friendly/Foe?)

Track and target moving ground vehicles

Phases of Conflict

I&W



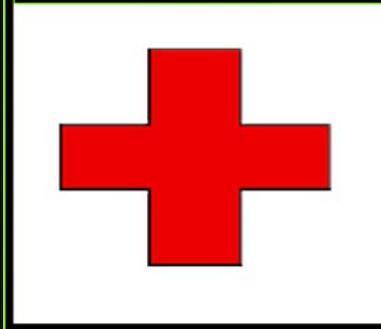
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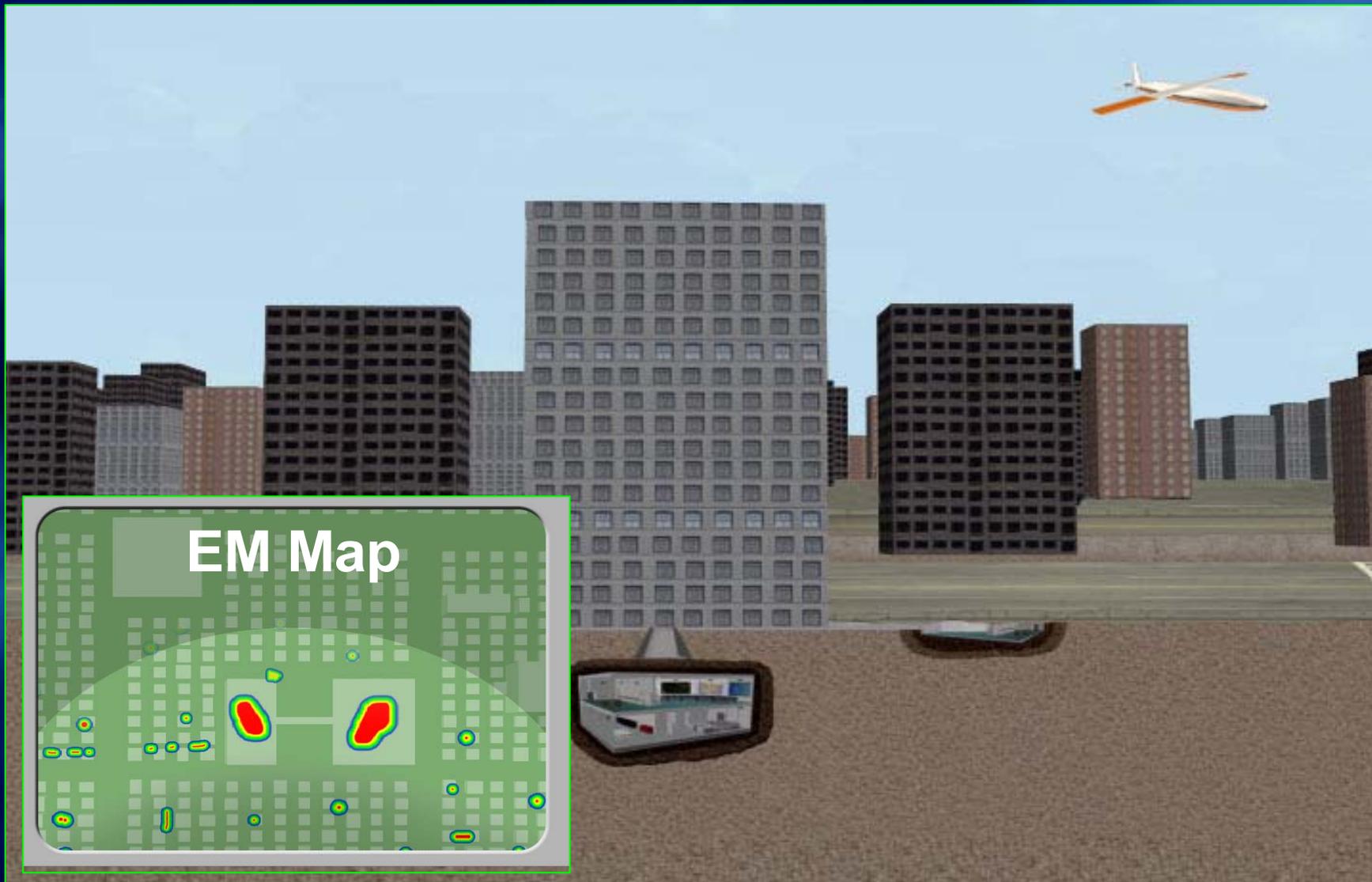
Combat



SASO

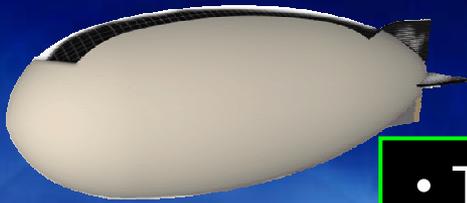


Finding Hidden C2 Sites



Tailored Tactical Surveillance

Locate, target
pop-up C² sites



- Track and target air vehicles
- Track and target dismounted troops
- Comms Skyhook
- Passive RF tags (Friendly/Foe?)

Track and target moving ground vehicles

Phases of Conflict

I&W

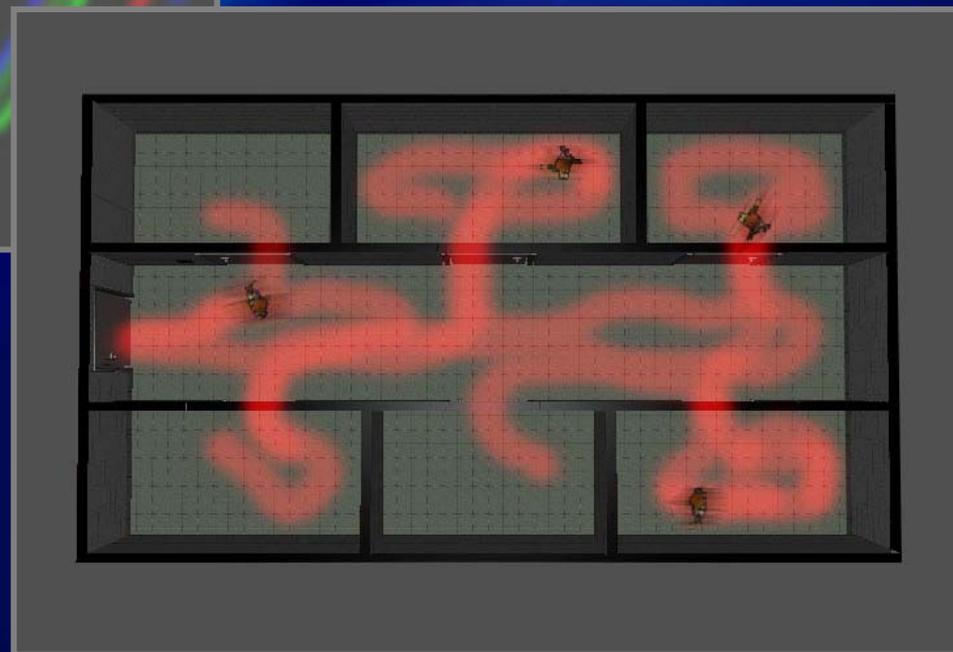
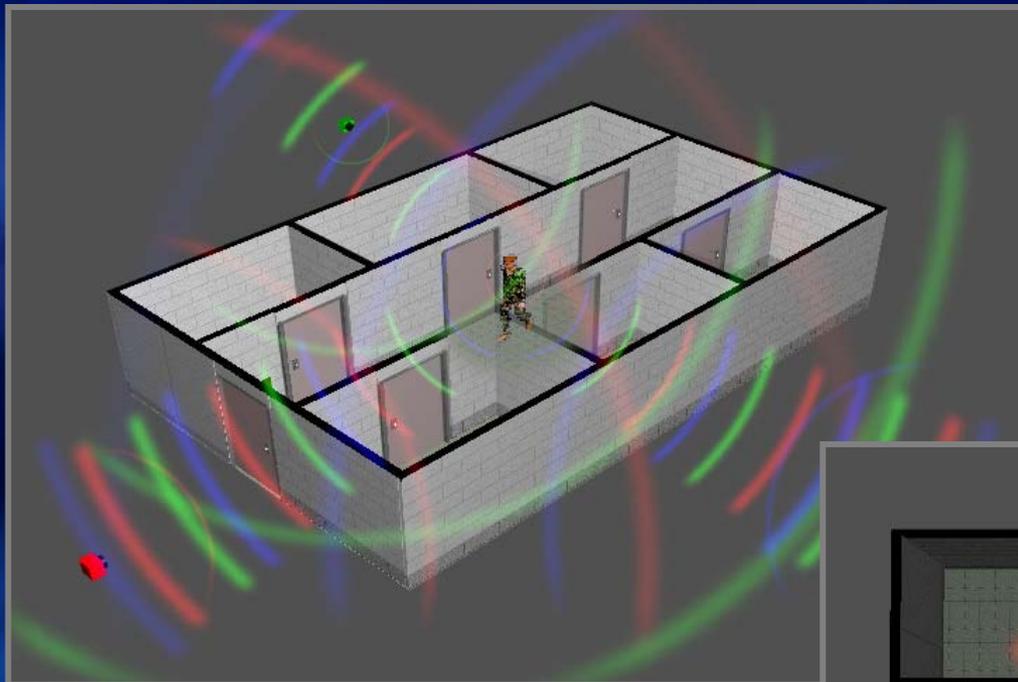
IPB

Combat

SASO

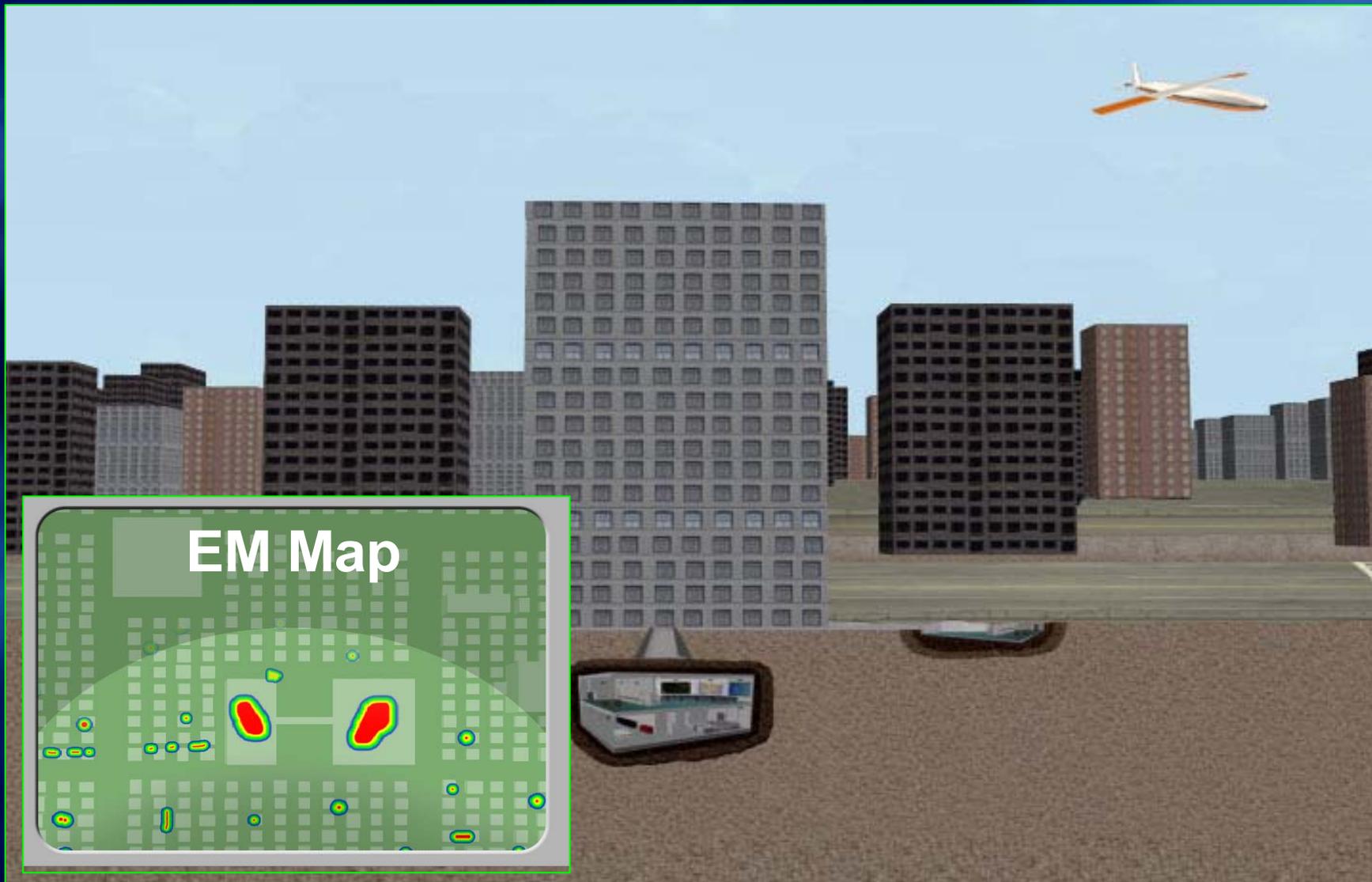


Urban Operations: IPB

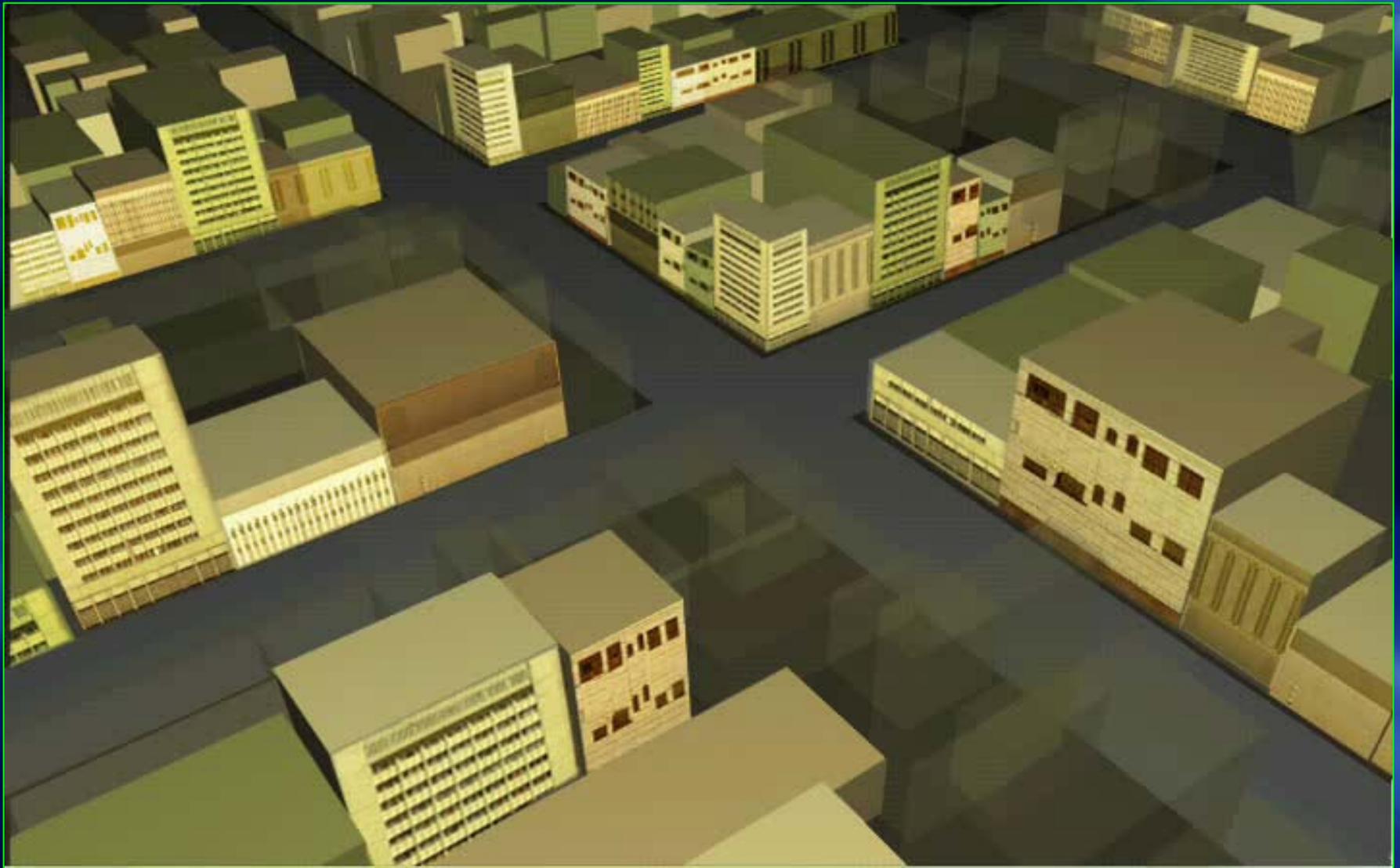


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Finding Hidden C2 Sites



Urban Operations: Combat



THE GAP

Urban Operations: SASO



Today's Focus Areas

Chem/Bio/Rad



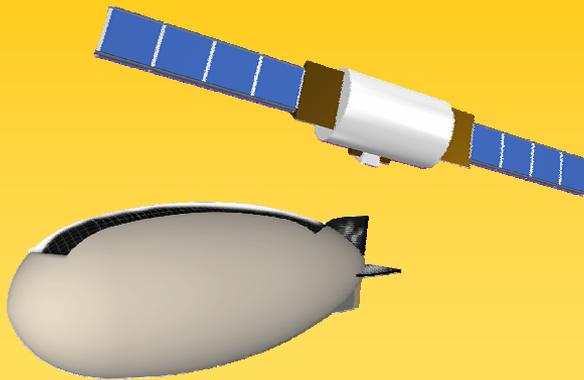
Counter Undergrounds



GPS-Free Navigation



Tailored Tactical Surveillance



Urban Operations

